

CLAIMS

What is claimed is:

1. A polarized reticle comprising:
a reticle including at least one first patterned region at least partially surrounded by at least one second patterned region, the first patterned region and the second patterned region each having different patterns defined thereon;
a polarized material having a first polarization direction disposed over at least a portion of the first patterned region of the reticle; and
a polarized material having a second polarization direction generally orthogonal to the first polarization direction disposed over at least a portion of the second patterned region of the reticle.
2. The polarized reticle of claim 1, wherein the reticle includes a plurality of the first patterned regions and a plurality of the second patterned regions.
3. The polarized reticle of claim 1, wherein the at least one first patterned region is an array region and the at least one second patterned region is a peripheral region.
4. The polarized reticle of claim 3, wherein the polarized material disposed over the at least a portion of the peripheral region is an organic polymer or an inorganic material.
5. The polarized reticle of claim 4, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.
6. The polarized reticle of claim 4, wherein polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

7. The polarized reticle of claim 3, wherein the polarized material disposed over the at least a portion of the array region is an organic polymer or an inorganic material.

8. The polarized reticle of claim 7, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.

9. The polarized reticle of claim 7, wherein the polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

10. The polarized reticle of claim 3, wherein the reticle comprises at least one of quartz or a glass.

11. The polarized reticle of claim 3, wherein the polarized materials are preformed films.

12. The polarized reticle of claim 11, wherein the preformed films are Langmuir-Blodgett films.

13. The polarized reticle of claim 1, wherein the polarized material disposed over the at least a portion of the first patterned region is an organic polymer or an inorganic material.

14. The polarized reticle of claim 13, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.

15. The polarized reticle of claim 13, wherein the polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

16. The polarized reticle of claim 1, wherein the polarized material disposed over the at least a portion of the second patterned region is an organic polymer or an inorganic material.

17. The polarized reticle of claim 16, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.

18. The polarized reticle of claim 16, wherein the polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

19. The polarized reticle of claim 1, wherein the polarized materials are preformed films.

20. The polarized reticle of claim 19, wherein the preformed films are Langmuir-Blodgett films.

21. The polarized reticle of claim 1, wherein the reticle comprises at least one of quartz or a glass.

22. A photolithography system comprising:
an illumination controller operably coupled to an illumination source configured to irradiate linear polarized light; and
a movable half-wave polarizer disposed between a polarized reticle and the illumination source, the polarized reticle comprising:
a reticle including at least one first patterned region at least partially surrounded by at least one second patterned region, the first patterned region and the second patterned region each having different patterns defined thereon;
a polarized material having a first polarization direction disposed over at least a portion of the first patterned region of the reticle; and
a polarized material having a second polarization direction generally orthogonal to the first polarization direction disposed over at least a portion of the second patterned region of the reticle.
23. The photolithography system of claim 22, wherein the movable half-wave polarizer is rotatable.
24. The photolithography system of claim 22, wherein the movable half-wave polarizer is removable.
25. The photolithography system of claim 22, further comprising a projection lens located to receive the linear polarized light passing through the polarized reticle.
26. The photolithography system of claim 22, wherein the polarized materials are each preformed films.
27. The photolithography system of claim 22, wherein the reticle includes a plurality of the first patterned regions and a plurality of the second patterned regions.

28. The photolithography system of claim 22, wherein the at least one first patterned region is an array region and the at least one second patterned region is a peripheral region.

29. The photolithography system of claim 28, wherein the polarized material disposed over the at least a portion of the peripheral region is an organic polymer or an inorganic material.

30. The photolithography system of claim 29, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.

31. The photolithography system of claim 29, wherein polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

32. The photolithography system of claim 28, wherein the polarized material disposed over the at least a portion of the array region is an organic polymer or an inorganic material.

33. The photolithography system of claim 32, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.

34. The photolithography system of claim 32, wherein the polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

35. The photolithography system of claim 28, wherein the reticle comprises at least one of quartz or a glass.

36. The photolithography system of claim 28, wherein the polarized materials are each preformed films.

37. The photolithography system of claim 36, wherein the preformed films are Langmuir-Blodgett films.

38. The photolithography system of claim 22, wherein the polarized material disposed over the at least a portion of the first patterned region is an organic polymer or an inorganic material.

39. The photolithography system of claim 38, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.

40. The photolithography system of claim 38, wherein the polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

41. The photolithography system of claim 22, wherein the polarized material disposed over the at least a portion of the second patterned region is an organic polymer or an inorganic material.

42. The photolithography system of claim 41, wherein the polarized material is an organic polymer selected from the group consisting of a ferroelectric polymer, polyvinylidene fluoride, and a liquid crystal polymer.

43. The photolithography system of claim 41, wherein the polarized material is an inorganic material selected from the group consisting of calcite, mica, quartz, and silica.

44. The photolithography system of claim 22, wherein the reticle comprises at least one of quartz or a glass.

45. The photolithography system of claim 22, wherein the polarized materials are each preformed films.

46. The photolithography system of claim 45, wherein the preformed films are Langmuir-Blodgett films.

47. A method of exposing a reticle to light comprising:
providing a substrate having a photoresist disposed thereon;
disposing the reticle comprising at least one first patterned region at least partially surrounded by at least one second patterned region between an illumination source and the photoresist on the substrate;
irradiating the reticle with linear polarized light from the illumination source; and
selectively filtering the linear polarized light to prevent the linear polarized light from exiting either the at least one first patterned region or the at least one second patterned region of the reticle while the linear polarized light exits the other patterned region to expose the photoresist on a portion of the substrate aligned therewith.

48. The method according to claim 47, wherein the selectively filtering comprises selecting the linear polarized light from the illumination source to have a polarization direction generally orthogonal to a polarization direction of a polarized material covering the first patterned region or to a different polarization direction of a polarized material covering the second patterned region.

49. The method according to claim 47, wherein the selectively filtering comprises altering a polarization direction of the linear polarized light by approximately ninety degrees.

50. The method according to claim 49, further comprising inserting a half-wave polarizer between the illumination source and the reticle to alter the polarization direction of the linear polarized light.

51. The method according to claim 49, further comprising removing the half-wave polarizer from between the illumination source and the reticle to alter the polarization direction of the linear polarized light.

52. The method according to claim 49, further comprising rotating a half-wave polarizer disposed between the illumination source and the reticle to alter the polarization direction of the linear polarized light by approximately ninety degrees.

53. A method of exposing a reticle to light comprising:
providing a substrate having a photoresist disposed thereon;
disposing the reticle comprising a pattern including at least one first patterned region at least partially surrounded by at least one second patterned region between an illumination source and the photoresist on the substrate;
irradiating the reticle with linear polarized light from the illumination source; and
selectively projecting either the first patterned region or the second patterned region of the pattern onto the photoresist.

54. The method according to claim 53, further comprising altering the polarization direction of the linear polarized light by approximately ninety degrees.

55. The method according to claim 54, further comprising altering the polarization direction of the linear polarized light by inserting a half-wave polarizer between the illumination source and the reticle.

56. The method according to claim 54, further comprising altering the polarization direction of the linear polarized light by removing a half-wave polarizer from between the illumination source and the reticle.

57. The method according to claim 54, further comprising altering the polarization direction of the linear polarized light by rotating a half-wave polarizer disposed between the illumination source and the reticle.

58. The method according to claim 54, further comprising selectively projecting the other of the at least one first patterned region and the at least one second patterned region of the pattern onto the photoresist.

59. A method of fabricating a polarized reticle comprising:
providing a reticle having at least one first patterned region at least partially surrounded by at least one second patterned region, the first patterned region and the second patterned region each having different patterns defined thereon;
applying a polarized material having a first polarization direction on at least a portion of the first patterned region of the reticle; and
applying a polarized material having a second polarization direction generally orthogonal to the first polarization direction on at least a portion of the second patterned region of the reticle.

60. The method according to claim 59, further comprising preforming the polarized materials prior to application to the reticle.

61. The method according to claim 60, further comprising forming the polarized materials to be Langmuir-Blodgett films.

62. The method according to claim 60, further comprising selecting the polarized materials to be films.

63. The method according to claim 59, wherein the applying the polarized materials comprises depositing the polarized materials on the reticle.

64. The method according to claim 63, wherein the depositing is effected by chemical vapor deposition, physical vapor deposition, or atomic layer deposition.